

Notice of Allowability

Application No.

10/506,499

Examiner

Hoang M. Nguyen

Applicant(s)

CONRAD, WAYNE ERNEST

Art Unit

3748

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to 09-18-06.
2. ☒ The allowed claim(s) is/are 1-7, 9-15 and 18-21.
3. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 - a) ☐ All b) ☐ Some* c) ☐ None of the:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
 - * Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

4. ☐ A SUBSTITUTE OATH OR DECLARATION must be submitted. Note the attached EXAMINER'S AMENDMENT or NOTICE OF INFORMAL PATENT APPLICATION (PTO-152) which gives reason(s) why the oath or declaration is deficient.
5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
 - (a) ☐ including changes required by the Notice of Draftsperson's Patent Drawing Review (PTO-948) attached
 - 1) ☐ hereto or 2) ☐ to Paper No./Mail Date _____.
 - (b) ☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).
6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)
2. ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____
4. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material
5. ☐ Notice of Informal Patent Application
6. ☒ Interview Summary (PTO-413), Paper No./Mail Date 09/21/06.
7. ☒ Examiner's Amendment/Comment
8. ☐ Examiner's Statement of Reasons for Allowance
9. ☐ Other _____

Hoang M Nguyen
Primary Examiner
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EXAMINER'S AMENDMENT

An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Mr. Mendes da Costa on September 21, 2006.

Please amend the title of the specification as follows:

[HEAT] STIRLING ENGINE WITH HYDRAULIC OUTPUT

Amendments to the Claims:

1. (Currently amended) A [heat engine] Stirling engine having a region within which a working fluid travels and an output system including a chamber having a liquid inlet connectable to a first conduit and a liquid outlet connectable to a second conduit, whereby, [in use,] the chamber, the first conduit and the second conduit define a circuit for a liquid and the [heat engine] Stirling engine produces power which is used to cause the liquid to flow through the circuit and to perform work on a member external to the [heat engine] Stirling engine as the fluid flows through the circuit.
2. (Currently amended) The [heat] Stirling engine as claimed in claim 1 wherein the chamber is open to the region within which a working fluid travels whereby the working fluid directly contacts the liquid to pump the liquid.
3. (Currently amended) The [heat] Stirling engine as claimed in claim 1 wherein the liquid is silicone oil.

4. (Currently Amended) The [heat] Stirling engine as claimed in claim 1 wherein the flow of liquid into and out from the reservoir is tangential.

5. (Currently Amended) The [heat] Stirling engine as claimed in claim 1 wherein the chamber is a liquid reservoir and the flow of liquid into the reservoir is tangential and the flow of liquid out from the reservoir is axial.

6. (Currently Amended) The [heat] Stirling engine as claimed in claim 1 wherein the chamber is a liquid reservoir and the flow of liquid into the reservoir is axial and the flow of liquid out from the reservoir is tangential.

7. (Currently Amended) The [heat] Stirling engine as claimed in claim 1 wherein the chamber is a liquid reservoir, the liquid travels in a circuit and the working fluid and the liquid are each pressurized to a pressure above atmospheric pressure.

8. Cancelled

9. (Currently amended) The [heat] Stirling engine as claimed in claim 1 wherein the circuit includes an accumulator positioned upstream and downstream from a fluid driven motor.

10. (Currently amended) The [heat] Stirling engine as claimed in claim 9 wherein the fluid driven motor has a rotary output.

11. (Currently amended) The [heat] Stirling engine as claimed in claim 10 wherein the accumulators and the fluid driven motor provide a rotary output system which employs fluid seals and does not require gas seals.

12. (Currently amended) The [heat] Stirling engine as claimed in claim 1 wherein the sealed region has a heating chamber and a cooling chamber and the a circuit includes a heat exchange portion exterior to the cooling chamber whereby the liquid is employed to remove heat from the cooling chamber.

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13. (Currently amended) The [heat] Stirling engine as claimed in claim 12 wherein the circuit includes an accumulator positioned upstream and downstream from a fluid driven motor and the heat exchange portion is part of a single flow line.

14. (Currently amended) The [heat] Stirling engine as claimed in claim 1 wherein the circuit includes an accumulator positioned upstream and downstream from a fluid driven motor and a radiator is provided in the circuit to remove excess heat from the engine.

15. (Currently amended) The [heat] Stirling engine as claimed in claim 14 wherein the radiator is positioned downstream of the reservoir

16. (cancelled)

17. (cancelled)

18. (Currently amended) [An] A Stirling engine driven hydraulic pump in fluid flow communication with [a heat engine] said Stirling engine, the hydraulic pump being driven by a periodic pulse produced by the [heat] Stirling engine wherein the periodic pulses cause a fluid to travel through a path that includes a reservoir and the hydraulic pump and the flow of fluid into the reservoir is axial and the flow of fluid out from the reservoir is tangential.

19. (Currently amended) [An] A Stirling engine driven hydraulic pump in fluid flow communication with [a heat engine] said Stirling engine, the hydraulic pump being driven by a periodic pulse produced by the [heat] Stirling engine wherein the periodic pulses cause a fluid to travel through a path that includes a reservoir and the hydraulic pump and the flow of fluid into and out from the reservoir is tangential.

20. (Currently amended) [An] A Stirling engine driven hydraulic pump in fluid flow communication with [a heat engine] said Stirling engine, the hydraulic pump being driven by a periodic pulse produced by the [heat] Stirling engine wherein the periodic pulses cause a fluid to travel through a path that includes a reservoir and the hydraulic

pump and the flow of hydraulic fluid into the reservoir is tangential and the flow of hydraulic fluid out from the reservoir is axial.

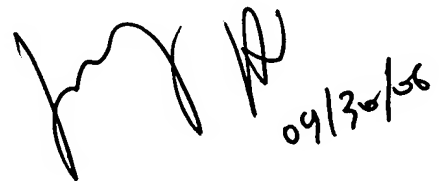
21. (Currently amended) The [heat] Stirling engine as claimed in claim 1 wherein the circuit comprises a fluid driven motor.

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Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Examiner Nguyen whose telephone number is (571) 272-4861. The examiner can normally be reached on Tuesday--Friday from 12:30 AM to 10:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on 571-272-4859. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



HOANG NGUYEN
PRIMARY EXAMINER
ART UNIT 3748

Hoang Minh Nguyen
9/30/2006